



UNITED STATES OF AMERICA



FOUNDED 1836

W A S H I N G T O N, D.C.

A discourse upon Vac-

P. 111.

3rd day

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A
DISCOURSE
UPON
VACCINATION,
OR
Kine-Pock Inoculation.

REMARKS UPON THE OCCASIONAL PREVALENCE
OF THE SMALL-POX, AND THE MEASURES
NECESSARY TO PREVENT IT.

Prodesse civibus.

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NEW-YORK:

PRINTED AND SOLD BY SAMUEL WOOD & SONS,
NO. 357, PEARL-STREET.

1816.



*To the Mayor, Aldermen and Commonalty
of the City of New-York.*

THE subscriber, from having taken an early and active part in the introduction and establishment of the practice of vaccination in this city, has been repeatedly requested to give to the public the result of his experience on this subject.

During the fourteen years that the disease has existed among us, he has given a close and scrutinizing attention to its specific character and prophylactic powers. His observations and opinions on the appearance of the disease, and the best manner of successfully communicating it; together with some remarks upon the cause of the present prevalence of small-pox, and upon the means of preventing it hereafter; are all so fully detailed, in the following *Lecture*, delivered to the clinical class of the N. York Hospital, that his friends have thought its publication would subserve the purposes of humanity.

This opinion he was the more disposed to listen to, from having observed that the present epidemic* has tended, in a great measure, to weaken public confidence in the only means hitherto devised to prevent it, and upon which alone we can depend, when under proper management, we may with safety depend for our security against the future recurrence of such a calamity.

The subscribers sincerely dedicating this Lecture to the guardians of the public health, and to his fellow-citizen,

V. SEAMAN.

* Small-pox.

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A DISCOURSE
Upon Vaccination, &c.

[1. Commencement of Vaccination in England.]

YOU have now, in a variety of cases,* witnessed an operation, which, although the most simple and trifling of any that comes under the hand of a surgeon, is, in its consequences, of the greatest importance: it has probably already done more good to society, prevented more pain and distress, and preserved more lives, than *all* the *capital* operations that have ever been performed. Previous to the introduction of Vaccination, more than one tenth of all that were buri-

* All children born in the lying-in-ward of the Hospital, are vaccinated before they leave the house.

ed in this city, died of small-pox; since which, latterly at least, with the exception of the present season, a death from that disease has been a rare occurrence.

Our business, however, is not so much to eulogize the vaccine disease, as to make you acquainted with the manner of communicating it with the most certainty, and of discriminating it with accuracy. An attention to these particulars being all that is necessary, to secure those who undergo it, against every danger from the small-pox.

It is now about eighteen years since Dr. Jenner first aimed a deadly blow at the small-pox, by publishing to the world, his "Enquiry into the causes and effects of the Variolæ Vaccinæ."

The very judicious manner in which this discovery was announced to the public, immediately gained it the sanction and confidence of a number of the most distinguished physicians of London; and the practice of it spread with a rapidity which no one

proportionate to its importance : it spread, indeed, much faster than the knowledge of the peculiar marks and character of the disease ; whence its reputation had nearly got blasted in its bud. Dr. Woodville, with a praiseworthy disinterestedness, substituted it, without hesitation, in place of the small-pox, in the practice of the Inoculating Hospital under his care.

The consequence of Dr. Woodville's adopting the practice of vaccination in his hospital, was that many of the patients, introduced into a house whose walls and furniture, from the nature of the establishment, must necessarily have been more or less impregnated with variolous infection, took the small-pox ~~at~~ every time that they were vaccinated. This gave rise to an opinion, that, like the small-pox, the cow-pock was an eruptive disease, and from the number and similarity of the pustules, very little if any, milder in its effects. But the evil stopped not here : Dr. Woodville, vaccinating (in his way) ~~more~~ ~~than~~ ~~any~~ ~~other~~ Physician, was ~~not~~ ~~more~~ ~~generally~~ applied to for infec-

tion ; which the number of his patients and the quantity of virus *they* afforded, enabled him readily to supply. Dr. Woodville, however, entertaining an opinion that the vaccine infection acted mildly or otherwise in some degree corresponding to the quantity of disease in the patient from whom it was taken ; would often, of course, both furnish others and use himself, the *real* vaccine virus ; as it is probable that some of his patients did not get the small-pox : all which tended to prevent this error from being so immediately detected as it otherwise might have been.

This error, however, did not last long ; its discovery and correction were soon followed by the establishment of the fact, that the vaccine disease is in its exterior marks confined to the spot where the virus was inserted ; or at most, in some rare instances, to a few imperfect vesicles in its immediate vicinity.

The practice of vaccination, however, was not permitted to supersede small-pox inoculation altogether, without a struggle ; in the country of its origin, in the very city where

it was first promulgated, it met with its most violent opponents. That it should not have obtained an immediate and universal confidence, is no way surprising when we reflect upon its wonderful and unaccountable operation ; having no principle in nature, nor analogy in disease to support its singular and peculiar powers ; while, on the other hand, the habits and scepticism of *some* of the profession, the cautious prudence of *others*, and the pecuniary interests of *all* were opposed to it.

When we recollect that the great Dr. Harvey lost all his practice by announcing the discovery, and demonstrating the circulation and true course of the blood ; and that none of the physicians of his day who were above the age of forty, could be made to believe it ; we are rather surprised than otherwise, that the practice of vaccination was so readily adopted. But this discovery was very different from that of Harvey ; whether or how the blood circulated, appeared of no immediate consequence to the people ; but in this case, their lives were in question, and

it was no easy matter to persuade them to risk the dying by small-pox, when by a little inquiry, they might find a safe and certain means of preventing it. All Dr. Moseley's spectres, his oxface diseases mentioned as an effect of the bestial humour being introduced into the human system, and of patches of cows' hair growing on different parts of the body, &c. could not deter them from being vaccinated. Those dreadful accounts of his, indeed, so far outstripped all possibility of belief, as, probably defeated the very object they were intended to effect : the more plausible (though no less false,) statements of mortal eruptions, phagedenic ulcers, &c. made less impression in consequence of the enormous incredibility of the monstrous misrepresentations.

Dr. Moseley commenced an early opposition to the cow-pock : he wrote ~~against~~ ~~of~~ as he acknowledges, before he knew what it was : and when an overwhelming evidence must have convinced him ~~of~~ however, he had not strength of mind enough to retract it : he suffered himself to be exor-

perated at every reported account of its success, so that what was a source of comfort to others, became one of the miseries of *his* life. But let us not bear too hard upon him : his gray hairs claim our tenderness, and his former good works demand our respect. This perversion of his talents, as well as the papers, pamphlets, books, and caricatures, made up by his zealous coadjutors, and even their intemperate language so lavishly bestowed upon the advocates of vaccination, may have all tended, indirectly, to promote the extension of the practice. They probably made vaccinators cautious not to let patients pass their hands as secure against the small-pox, without being fully satisfied of it having regularly gone through the disease.

Perhaps it was rather a disadvantage, than otherwise, that one of our most active opponents in this city, was so early checked, in being detected in attempting to impose a case of *chicken-pox* upon a class of students for small-pox, after vaccination. It would have been as well for us to have had a few such catchers, constantly on the alert, to make a strike at the reputation of

those who might carelessly suffer their patients to believe themselves secure : without having carefully observed the progress of their disease through all its stages !

[2. Introduction of Vaccination into New-York, with early evidences of its antivariolous powers.—*N. York Kine-Pock Institution.*]

HAVING obtained infection, I succeeded on the 22nd of 5th mo. 1801, in communicating the kine-pock to several persons in this city. “The complaint commencing with a slightly inflamed spot, gradually increased to a circular pustule, elevated at its edges and depressed in the centre, containing a transparent watery fluid, slowly oozing out at punctures made in it, and finally terminating in a hard dark coloured scab ; all through the various stages, so exactly corresponding with the accurate descriptions and delineations given by the most attentive writers, left no doubt on my mind of its being the genuine vaccine disease.”—(See *Report in Med. Rep. vol. 5.*)

From them a supply of infection was continued for some weeks, and until eighteen per-

sons had undergone the disease ; when a severe indisposition preventing the pursuit of the object, the infection was lost. Although vaccination was not so violently opposed here as it had been in London, it did not as yet meet with a very cordial reception : some among the profession, who cared less about gaining knowledge, than the being suspected to lack it, hesitated not to pronounce an unqualified opinion against it ; this working upon the existing prejudices of the people, required every exertion on the part of the vaccinator to obtain subjects enough to preserve and continue the infection. Other physicians, habituated to the small-pox inoculation, cared little for any thing better : without duly appreciating the immense advantages of general vaccination, and resting satisfied with their old routine of business, they were opposed to innovation.

Others again, those best informed upon the subject, were not disposed to take the trouble to seek and persuade individuals to submit themselves to what might be considered, at best, but a questionable experi-

ment. So that from ignorance and prejudice on the one side, and indifference and apathy on the other, the new practice which had thus been successfully introduced, was suffered to die in our hands.

Of those who had been vaccinated, several were afterwards inoculated for the small-pox, to determine by actual experiment among ourselves, the truth of what had been reported of its prophylactic powers abroad. "Capt. I. O'Brian's babe, boy, and black girl, on the 23d of the last month (June, 1802,) fifteen days after they had had the kine-pock inserted, were inoculated by a double incision with the most active small-pox matter, fresh taken from a person then labouring under that disease in the natural way; of whom were any way affected thereby than by a slight irritation upon the skin which disappeared in the course of seven days. After ten days they were again inoculated over again with a true small-pox matter; and with a like result. The last person whom the proving experiments were made was a servant woman of James Mandeville,

Pearl-street. She was inoculated on the 7th of this month with active virus still fluid from the pustule of a person who had a great load of small-pox : this was the sixteenth day after her vaccine inoculation. She has not since (and now it is twenty three days,) experienced any effect but a little tumid redness upon the part, which disappeared in less than a week. Her son of about seven years of age, who had been inoculated for the kine-pock fourteen days before, was also inoculated for the small-pox on the 11th of the present month, but to no effect.

“ This disease, (if a disease it may be called,) as far as had come within my observation, had been of an extremely mild nature. Not a single instance, in children, had appeared the least general indisposition; nor in grown persons, had there been anything to interrupt them in their usual occupations. Not one had had any eruption whatever except at the incision.”

It occurred, that “ whether the infection was lost or not, I consoled myself

in having at least done justice to my own child by having implanted it in him; and I felt a full compensation for all my trouble in the business, in the well grounded belief of having secured him thereby from being subject to a disease, which even in the then improved manner of treating it, was always dreaded—not unfrequently painful and distressing—sometimes ruinous to the constitution—and at other times more immediately fatal."—*(Report in the Med. Repos. vol. V.)*

In the course of the following winter, fresh infection having been obtained, vaccination commenced anew, so that by the 22d of Dec. 1802, thirty-five others (as appears by a public letter I then addressed to Dr. Waterhouse upon the occasion,) had undergone the disease, "which with the eighteen inoculated before, made altogether fifty-three who had had the disease, and in no one had there been so much indisposition as to cause a single day's confinement. Of these, fifteen had afterwards been inoculated, with a double incision, for the small-pox, without producing any effect further than a temporary slight

inflammation on the part, which disappeared in a few days ; notwithstanding the most active fresh matter was employed, and, in most instances, while still fluid from the pustules of persons under great burdens of the disease in the natural way. In fine, the operation was repeated, and always with a like result.

“ I had not as yet obtained a single co-operator ; nevertheless, the disease appeared to be gaining the confidence of many of our citizens, and some of our practitioners who had been loud in their opposition, began to soften their notes, and others, I was confident, would soon adopt the practice.

“ For my own part, I was so completely confirmed in the belief of the protecting power of the kine-pock against the infection of the small-pox, as to entirely refuse inoculating with the latter, unless as a test to those who had passed through the former. Indeed, under my then impressions, I should have thought myself highly criminal in inflicting such a loathsome disease, which sometimes proves fatal, while I had a means in my pos-

session of answering all its good purposes, and that without danger.

" There could be no doubt, I observed, but that the new practice would, before long, be pretty generally established in this city ; the greatest fear was, that the mild nature of the disease would induce many to attempt its propagation before they made themselves acquainted with its characteristic marks, in its different stages ; or with the proper manner of communicating it, whereby a *degenerated festering scab* might be spread about, for the real disease ; which like other counterfeits, would not only injure the persons imposed on, but would also diminish the currency and true sterling worth, of this most inestimable discovery.

" By keeping within the bounds of *Jenr Golden Rule*, never to take the *Virus* till the *Efflorescence* had *formed*, and always inoculate with infection fluid from the pustule, and never taking it a second time from the same one, I uniformly succeeded in communicating the disease, although

obliged to inoculate a number from a single patient."

The above publications announcing the vaccine disease to have actually got footing among us, and that its beneficial effects had proved equal *here* to what had been said of it elsewhere, could not but command the attention of our citizens. In a short time after, the following communication appeared in several of our papers.

*'Interesting?'**

'From a belief that the public are not generally acquainted with a mild disease, which promises to be one of the greatest of

This address was drawn up and published, not by a physician, but by the late Samuel Bowne : a man whose truly philanthropic heart let no means escape by which he could alleviate the distresses or promote the happiness of his fellow creatures. His active and benevolent ardour, in the cause of humanity, will long make his memory a subject of general and deep regret, among a numerous acquaintance : his amiable manners and affectionate character will ever endear his *memory* to his more intimate

blessings to mankind, inasmuch as it operates with those who have had it, as a complete security against the small-pox, we are induced to publish some extracts from a work by the learned Mr. Ring, of London, now in the press, (a few proof sheets of which have come to hand) replete with well authenticated facts of the antivariolous effects of the inoculated kine-pock. With a view of disseminating the knowledge of facts so highly interesting to the world, we feel confident of the aid of every philanthropic editor of a public paper, who we believe cannot detail to their subscribers, information of a more important nature than is contained in the following extracts.'

" Among other falsehoods propagated respecting this disease, was the following: that the celebrated Dr. Jenner, (who first called the attention of the world to this important subject) entertained doubts of the effect of the cow-pock in preventing the small-pox; and that his servant whom he inoculated with the cow-pock, afterwards had the small-pox and died. In answer to a letter written him on

the subject, he says, "the whole of the assertion you heard at the medical society, respecting my entertaining doubts of the efficacy of the cow-pock in preventing the small-pox is *entirely false*, and must have been invented by some malevolent person with a base design. The idea I ever entertained of the security of the patient, has been strengthened by my late experiments. Many of those who have had the cow-pock have been inoculated with small-pox matter, and some have also been subjected to the following test: they have had sheets wrapped round them in which those had lain who had full burdens of the small-pox, some had the matter thrust up their nostrils, and others have been put into beds with those who had the small-pox in the highest state of infection, but they all resisted its action.

" Mr. Kelson is of opinion that the vaccine disease, when unattended with eruptions similar to variolous, is a thousand times more trifling than the small-pox : he scarcely had a patient sufficiently ill to prevent amusement or labour ; and that it is not an infectious disease.

" To determine this last point, he selected about forty people in the workhouse, and inoculated half of them, and fixed them to sleep with others, who had not had the disease, but in no instance was it communicated to others. He broke the pustules, and frequently made them smell the parts, but to no effect.

" After giving the disease to the remainder, the following experiments were made, in order to ascertain whether it was a security against the small-pox. First, he inoculated the whole party with the most virulent matter he could procure, but nothing ensued except local superficial inflammation for the first six or seven days. He then introduced a wretched family, just recovered from a very bad small-pox, their dirty clothes unchanged, and divided them in different beds among them, but to no purpose. He then inoculated with the cow-pox an infant as soon as he was satisfied that infection had taken place, had it put into bed with a woman who had the most dreadful confluent small-pox, but no inconvenience ensued.

" Mr. Fermor has related several cases which afford substantial evidence that those who have had the cow-pox, are rendered insusceptible to the small-pox, though inoculated a considerable time after, and at different periods. In one case the person had the cow-pox 36 years ago, and was inoculated 4 years after, but without effect. Nine years ago his family were inoculated with the small-pox and were infected ; but he escaped, though he attended them the whole time. This case is a decisive proof that the security against the small-pox which the cow-pox affords, is permanent.

" Mr. Fermor also relates many other cases equally convincing. Dr. Denman says, in one of the regiments of the Gloucestershire militia, upwards of a hundred men who had not had the small-pox, were inoculated with cow-pox and had the disease. The regiment was shortly after ordered to go into barracks which had been inhabited and were just quitted by a regiment which had been infected with the small-pox, and suffered severely from it. The barracks were not even cleaned before the Gloucestershire regiment took possession ;

yet not one of the men who had been inoculated for the cow-pox was infected with the small-pox.

“ Mr. Blair says, he has obtained intelligence of about 14,000 persons having been inoculated for the cow-pox. I am inclined to believe, that there have been, at least, twice as many. The number that has been secured from the ravages of the small-pox is incalculable. The practice is established in almost every part of the kingdom, and so many practitioners apply for matter, that those who devote themselves to this branch of the profession, can scarcely supply the demand.

“ Copy of a testimonial in favour of Vaccine Inoculation.

“ Many unfounded reports having been circulated, which have a tendency to prejudice the public against the inoculation of the cow-pox, we the undersigned physicians and surgeons, think it our duty to declare our opinion that those persons who have had the cow-pox are perfectly secure from the future infection of the small-pox. We also

declare that the inoculated cow-pox is a much milder and safer disease than the inoculated small-pox.

“Signed by Drs. Saunders, Bailie, Vaughan, Garthshore, Lettsom, Hume, Simms, Thornton, and upwards of 100 more of the most eminent physicians and surgeons in London and its vicinity, and in Leeds, Dunham, and Chester.

“ The above declaration in its favour, has gratified the most sanguine expectations, as the rapid increase of proselytes and insatiable demand for vaccine virus fully prove. That declaration has given confidence to the medical profession and to the public. It is a tower of strength—a pillar of support—a rock, around which all opposition will rage in vain.

“ Other physicians and surgeons in every part of the kingdom are signing other similar testimonials.”

‘ In the work from which the foregoing extracts are taken, is collected a great mass

of evidence of the perfect security of those who have had the kine-pock against taking the small-pox ; also of the mildness of the disease, which seldom requires medicine, or interrupts the attention to the usual employment of the patient. The author lays great stress upon procuring genuine matter, as the use of a spurious kind by some practitioners in England, tended for a time to lessen the public confidence. Dr. Seaman, who has been indefatigably, and we believe solely, pursuing for some time past, the practice of vaccine inoculation in this city, we are informed, is fully convinced from repeated tests, that those who have had the genuine kine-pock, are thereby rendered secure from the infection of the small-pox. It is much to be regretted that the citizens of the United States are not more generally acquainted with a subject, of infinitely greater importance to them, than the knowledge of revolutions, battles and bloodshed in Europe.

From this time the practice of vaccination began to increase, several physicians became convinced of its importance, and

number of citizens were impressed with the propriety of forming an *Institution* for the inoculation of the poor, &c. which, it was thought would, at this time, be particularly useful ; inasmuch as the public sanction of a number of respectable names that might be connected with it, would in a great degree, do away the prejudices of the ignorant, and fix the wavering confidence of the less intelligent part of the community. A subscription being opened, a sufficient number of contributors were soon obtained, to carry the project into effect, and it was shortly after organized upon a plan calculated to inspire general confidence in the disease, to secure a constant supply of the infection, and to disseminate it extensively, with such precautionary remarks and illustrations as were deemed necessary to ensure its successful and salutary practice.

The affairs of the Institution were so well conducted during the three years of its continuance, that of all the persons whom they had vaccinated, not a single one has been known to have taken the small-pox afterwards,

notwithstanding that disease has prevailed in the city at several different times since.

The two great objects of the Institution, the establishing a general confidence in the practice of vaccination, and the giving an extensive circulation of infection, together with the best manner of using it, having been effected ; little was left for it to do, but to vaccinate the poor. This business, at the solicitation of the trustees of the Dispensary, was transferred to that charity : where its humane operations, under a variety of management, have been since continued.

[3. Theoretical objections to Vaccination considered.]

HAVING in this account of the introduction of vaccination amongst us, embodied a sufficient number of facts, (as it is believed) fully to satisfy you all of its antivariolous powers ; let us examine a few *theoretical* objections that have been raised against it.

Our not being able to account for its singular attributes, has been urged as a reason

for not believing it to possess them ; but in truth every thing relative to small-pox is equally mysterious and unaccountable.

Why every one born into the world should be subject to the small-pox ; why those whose *both parents* have had it, and that to ever so severe a degree, should be as subject to it as the children of those who never had had the disease : why the having had it once should ever after secure against a second attack ; why inoculation makes it milder, and that even when the person, at the time of inoculation, is exposed to take it the natural way ;* and why the slightest affection received by inoculation should as certainly protect against a future occurrence, as the having undergone the disease in its most violent forms ; are all inexplicable circumstances : all believed merely because they are known to be true. If facts then as

* Baron Dimsdale, who was one of the most successful inoculators of the small-pox, directs that the person to be inoculated should be taken to the one from whom the infection is obtained for the purpose.

fully substantiate the antivariolous effects of the cow-pock, there can be no reason for doubting it, or for hesitating in giving it our support.

To some diseases, as itch, syphilis, &c. a moral good seems to be attached; but why the generations of man should be necessarily and indiscriminately predisposed to the small-pox, is altogether beyond our ken. We question not the wisdom of Providence in having inflicted this plague, why then doubt his goodness in bringing it to an end? We have long borne the severe affliction, let us not ungratefully spurn the proffered relief.

Some, affecting to believe in the cabalistical powers of numbers, have limited the preventative powers of vaccination to *seven* years; having no facts to ground such an opinion upon, they might as well have fixed upon three or five, or any other number: they would have done better however, to have fixed upon *seventy* and *seven*, inasmuch as that would put the confounding day of

conviction further off. A much shorter period would be altogether untenable, as even at the earlier periods of vaccination, there were a number of persons living who had passed through the disease, taken casually from the cows for as long as from 20 to 50 years before, who had since, and particularly of late, been repeatedly exposed by inoculation, and in every other possible manner to the infection of small-pox without effect.

[4. Of the causes of failure in communicating the disease, and of its uniformly and unexceptionably preventing the small-pox.]

THE prejudices against the kine-pock were at length removed ; and their removal was succeeded by a kind of general enthusiasm in its favour, almost as bad. Persons of all descriptions entered upon its practice : not only physicians who had taken no pains to inform themselves upon the subject ; but men and women altogether out of the way of knowing any thing about it, were volunteering their services in spreading the disease ; even children were sporting with their pearly vesicles and vaccinating one another at

school. The limited extent of the local affection and the lightness of the systematic disorder, which admitted of its being so trifled with, were the very causes leading to mistakes and mischief. The incision becoming sore, was full evidence, with the ignorant, of the disease having taken : while, if the part became *very sore*, a (circumstance which seldom or never takes place, unless from injury, in the genuine disease,) it was considered a complete confirmation of its being effectual.

With the physicians, the carelessness of many among the more intelligent, equalled, in effect, the ignorance of the less informed ; vaccinating their patients and neglecting to observe the progress of the disease, seeing them perhaps but once or twice during its whole course, and sometimes satisfying themselves with mere hearsay accounts of it, either from the mothers of their patients or from the patients themselves.

But even with the best informed and most careful practitioners ; difficulties at times

take place from the disorderly conduct of their patients. Some set down all the wholesome advice and necessary requisitions of the physicians upon these occasions, to the score of mere professional parade ; the wishing to make the most of a little matter. Such ones being vaccinated, and finding the incisions to become inflamed, feel satisfied that they have taken the disease ; laugh at the grave admonitions of the doctor, and never shew themselves afterwards.

Under all these considerations, is it surprising that some should afterwards take the small-pox ? or is it not rather surprising that so many escape it ?

Whether any one who has regularly passed through the genuine kine-pock, has ever afterwards had the small-pox, I cannot, for my own part, pretend to determine. I can only say that I have never met with a case of the kind ; *no person that I have vaccinated has ever to my knowledge, taken the small-pox after it.* Still intelligent and judicious physicians admit that instances have occurred, but

upon a fair and candid investigation, such instances do not appear to be more frequent or in greater proportion than those who take the *small-pox* a second time. *To say the worst of it then, it affords as good a security against the future occurrence of small-pox as the having had the small-pox itself does.*

[5. The causes of the occasional prevalence of the small-pox, and of the means of prevention.]

THE greatest objection to the new practice, the one most difficult to remove, is, that by superceding the small-pox inoculation, that disease will frequently, in particular places, become altogether extinct ; whence no immediate danger threatening, many parents will neglect to have their children vaccinated ; of course, in a little time, a great number will be accumulated to suffer and to die with that disease, when it may afterwards be introduced. Formerly, when small-pox inoculation was generally practised in this city, parents were anxious to have their children inoculated early ; the disease being always in the neighbourhood, existing dan-

ger called for immediate attention. The small-pox, with the exception of these few last months, had, of latter years, been hardly known among us ; parents became careless ; and the number of predisposed individuals, from a natural rapid increase, had become very great. Under these circumstances, the small-pox in its most virulent form, and at a season favourable to its spreading, has made an inroad among us, and is now sweeping away its victims in a degree truly alarming, and justly calling forth the exertions of the police to arrest it.

The natural effects of the disease, together with the means put in operation against it, will probably soon terminate the present epidemic. To prevent its recurrence is now the great desideratum. The question is how to prevent the return of a similar calamity.

There are probably as many as three thousand children annually born in this city ; if but a small proportion of these, by the improvidence and carelessness of their parents,

should be permitted to go without being vaccinated, an immense number, in a very few years would be ready to take the small-pox, whenever they might be exposed to its infection.

To prevent the prevalence of the small-pox hereafter, inoculation for that disease should be prohibited altogether. An universal confidence in the prophylactic powers of the kine-pock should be supported; and a general practice of vaccinating, at an early age, particularly among the poorer classes, should be promoted. The first of these objects can be effected by the interposition of legislative authority only. To remove popular prejudices, and to establish a proper degree of confidence in the kine-pock, requires the united exertions of the faculty in support of its efficacy; and their judicious and careful attention to the regular progress of the disease in their individual practice, that not a single instance of failure may occur to injure its reputation.

But public confidence, however essential, and however firmly fixed, will not of itself

answer our wishes ; carelessness and improvidence will prevail, and hundreds, if not thousands of neglected infants will remain unprotected among us, unless some more efficient measures be adopted. It is questionable whether a sufficiently general vaccination, upon which alone rests our security, can be obtained by any thing less than the supporting a source of active infection, where practitioners may depend upon being supplied, at all times, with that which is genuine. This should be connected with an establishment for vaccinating the poor ; to whom such inducements should be held out, as would secure to their children and to the community, the advantages of having them vaccinated at an early age. These objects may be fulfilled, either by the re-establishment of an institution, with views limited to these specific purposes ; or by the appointment of one or two physicians, who should take the responsibility upon themselves, and risk their reputations upon the success of their exertions.

Having in this account of the introduction of the kine-pock detailed, circumstantially,

so many facts in proof of its antivariolous power, it is unnecessary for me now to take up your time by the relation of others, as none could be more appropriate, or be ascertained with a more scrupulous precision. We shall only say, in short, that all our subsequent experience is in full confirmation of what had been before established, that *those who have had the kine-pock, are ever after secure against the infection of the small-pox.*

[6. Of the casual cow or kine-pox, vaccinæ, and of the inoculated disease, vaccinâ, cow or kine-pock.]

THE vaccine disease received from milking cows affected with it, had been long known among the country people in some of the dairy counties of England, as a preventative of the small-pox ; their opinion, however, was but little thought of by others, being set down as a vulgar error arising from ignorance and credulity ; the love of the marvellous probably being considered as having had some share in making up and finishing off their accounts of it. It attracted no general notice ; the knowledge of the fact

remained with those in whom it originated, until Dr. Jenner, from being repeatedly foiled in his attempts to communicate the small-pox, and having had this circumstance (their having had the cow-pox) uniformly assigned as the cause, was induced to give some attention to it. He found by repeated trials, that those who had taken the disease from the cow, either casually or by inoculation, were all afterwards incapable of receiving the small-pox.

The establishment of this singular and interesting fact, however gratifying it might have been to the curious, was of but little practical importance to society at large; its benefits, from the then state of knowledge upon the subject, being necessarily confined to those in the more immediate neighbourhood of the affected animals.

It was at this time that Jenner conceived *the great experiment*, which was to determine whether this disease, now so circumscribed, might not be made to extend over the world, to the benefit of the whole of the human

race. He inoculated with infection taken from a person who had received the disease from the cow, and succeeded in communicating it, somewhat altered in appearance, and milder than the casual disease, but no ways diminished in its virtues : he inoculated from those again ; and again from those, until the experiment resulted in the *discovery of this most important fact*, that the disease might be transmitted from man to man, without undergoing any further change, and rendering them equally secure against an after attack of the small-pox as if they had taken the disease directly from the cow.

The disease, when received casually from the cow, is not exactly like that thus transmitted through the human system by inoculation; the former is attented with a considerable degree of fever, of three or four days duration, with a number of *bluish vesicles*, which frequently end in obstinate sores, while the latter, with a feverishness so slight as often to pass unnoticed, and seldom continuing for more than a few hours, is 'accompañed by' but a single *white vesicle*, at the place where the

virus was inserted, which gradually becomes a dry scab, with no attendant discharge, nor any subsequent ulceration.

It is this latter kind, the transmitted, the humanized disease only that we have had to observe, and to which we must direct and confine our remarks.

[7. The appearances of the inoculated kine-pock in its different stages; its comparison with the small-pox.—Nosological arrangement.]

THE progress of the disease when the operation has succeeded, is generally in the following order: about the third day, the incision appears a little inflamed, as in the first figure of the annexed print, and it feels a little tumid to the touch: these appearances continue gradually to increase till about the sixth day, when it nearly resembles the second figure of the print, the skin being a little raised into a white vesicle abruptly rising at its edges, flattened over its general surface, and a little depressed in the centre. Its margin is firm, turgid, and

round, so as often to extend a little beyond the circumference of its base, (see fig. 2 of the print, which represents a vertical section of the vesicle) these appearances, however, are better marked about the ninth or tenth day.

On the tenth or eleventh day, the vesicle, which before was encircled by a very little redness, or by none at all, in the course of a few hours becomes surrounded with a pretty considerably extended efflorescence, as represented by the fourth figure, in most instances well defined and circumscribed ; the part at the same time being considerably tumified and hard to the touch ; about this time, or a little before, there is also frequently a considerable pain at the inoculated part, and some pain and enlargement of the glands in the axilla. In the course of twenty-four hours, this efflorescence begins to lose its vivid redness, becoming in most cases of a paler dull hue, as depicted in the fifth figure, sometimes partaking of a yellowish tinge, at other times assuming a darker livid redness, all which vanish in a few days, at times, with a

light furfuraceous desquamation ; but for the most part, this does not take place, the skin at once returning to its wonted natural appearance. During the fading of the efflorescence, the tumid hardness also as suddenly abates, nothing but the vesicular affection remaining.

The vesicle has uniformly a whitish appearance till after the efflorescence is formed, but then begins to assume a darker colour, as in the fifth and sixth figures, so that by the eighteenth or twentieth day it becomes a hard dark mahogany-coloured scab : this continues for a number of days, but at length falling off, leaves nothing but an escar remaining. The escar is somewhat like that from the incision of the inoculated small-pox, generally however, not so smooth and polished, its surface being marked by minute pits or indentions, corresponding, as it is supposed, to the number of cells of which the original vesicle was composed. Sometimes, during the progress of the disease, there has one or two small pimples appeared within a little distance of the vesicle.

seldom coming to any thing, but losing themselves in the general efflorescence.

The vesicle of kine-pock, unless it has been injured, never contains any purulent matter ; and if a puncture is carefully made into it with the point of a sharp lancet, a little limpid fluid, clear as a dewdrop, almost immediately exudes ; but the contents of the vesicle will not be all discharged from a single opening, it appearing not to be contained in one common cavity, like that of the small-pox and other pustules, but in a number of distinct cells; therefore, to exhaust it, it should be punctured in several places, when it will discharge at each opening : this is the real genuine and active virus, and which, according to Dr. Jenner's *rule*, never should be taken for inoculation after the efflorescence has formed.

About the sixth, seventh or eighth day, from the insertion of the virus, there is often some little indisposition experienced, such as head-ach, rigors and slight fever ; but frequently the patients shew no signs of gene-

ral indisposition or uneasiness whatever, and very seldom, so much as to interfere with their customary employments.

When we attentively mark the progress of the disease, whether of the casual or of the inoculated kind, through its whole course to the final falling of the scab, and compare it with the ordinary course of the small-pox; we are struck with their remarkable resemblance. When the diseases are taken in the natural way, they both commence with fever, which continues from one to four days, and abates after the appearance of an eruption. They are both rendered milder by inoculation. When inoculated, they both shew marks indicative of the virus having taken effect at a like period after its insertion. The constitutional indisposition induced in either case, is generally first felt about the sixth or seventh day. The efflorescence around the vesicle takes place at the very period that we look for the eruption in the small-pox. And finally, the kine-pock vesicle and the small-pox pustules, after turning, dry away, and

form a scab, which falls off about the end of the third week.

When we contemplate this close analogy, this apparently near relationship between the two diseases, we cease to wonder that they reciprocally prevent the occurrence of each other. No person having had the one or the other, (as far as my observation goes) can ever afterwards be made to take either. The cow-pox would seem therefore to be merely a milder grade of small-pox; what Dr. Rush might call varioliculæ.

Should the cow-pox in nosological order be placed as a species of variolæ, the arrangement under that genus might then stand thus :

1. *Variolæ confluentes, Confluent small-pox.*

With numerous pustules confluent, &c. fever continuing after the eruption.

2. *Variolæ discreta, Distinct small-pox.*

With pustules distinct, circular in their limits, &c. fever ceasing after the eruption has taken place.

3. Variolæ Vaccinæ, Cow-pox or kine-pox.

With a number of bluish vesicles, accompanied with fever of three or four days duration, frequently leaving troublesome ulcers.

4. Variola Vaccina, Cow-pock or kine-pock.

With but a single white vesicle, attended with slight fever, generally lasting only a few hours, without any succeeding ulceration.

[8. Irregularities in the disease, their causes, and the attention necessary in such cases.]

THE kine-pock in most instances, progresses very exactly in the manner described ; exceptions however, at times, occur ; sometimes the puncture does not inflame or shew any signs of the infection having taken till considerably later than the stated period : in some cases, the infection seems to lie dormant for as much as 15 or even 20 days, and yet a genuine vesicle finally appears, and pursues its regular course ; in these instances, we may make ourselves perfectly easy as to

the beneficial result ; but when the inflammation commences earlier than the usual time, there is always room for doubting its efficacy, and its progress should be narrowly and critically observed: nor should we be satisfied in regard to it, unless its after stages be very distinctly and correctly marked. It seldom happens that the areola does not form around the vesicle by the eighth or tenth day from the first appearance of inflammation in the part; when it anticipates the usual period, we should fear its not being genuine. The areola or efflorescence at times is much more extensive than that depicted in the print; but if this is not owing to injury, it generally subsides in a few days. When the vesicle has been carelessly rubbed off; if at an early period, it, for the most part, is soon renewed, and passes on regularly afterwards: sometimes however, a degree of ulceration succeeds, disturbing its regular course so much, as to make it prudent to withhold our opinion as to its prophylactic effects, until we shall be convinced, by an after operation, that the system has undergone the necessary change.

Nothing is more apt to prevent the infection from taking, or to produce irregularities in the vesicle, than the presence of cutaneous eruptions: you ought therefore never to inoculate children with such complaints upon them (unless immediate danger from small-pox should make it particularly necessary) before they are first cured. Such diseases, have heretofore been observed often to prevent the small-pox inoculation from succeeding; causing an ill-conditioned festering sore in place of the regular disease.

In all cases where there exists the least doubt of your patients having had the disease properly, you should vaccinate them over again, and in a way best calculated to insure a successful insertion: it should in these instances always be done with fresh fluid infection, otherwise its not taking will be no proof of their having had the disease, and you will still remain in nearly as much uncertainty as before.

Since, say some of the speculative opposers to vaccination, since there are so many

sources of failure and mistake from the ignorance or carelessness of practitioners, and the negligence of patients ; and such danger of derangement from accidents or the interference of other diseases, we had better inoculate for the small-pox at once, and although part of them should die,* the survivors would be better satisfied. A doctrine this, admirable only for its boldness, I trust, physicians and parents will hardly subscribe to : indeed, it is not even specious; for if practitioners be ignorant, they may learn to know, and discriminate this disease as easily and as certainly, as they can the small-pox ; it is as well defined, and as distinctly marked. Very few patients will neglect the proper attention, if suitably

* During the fifteen years immediately preceding the introduction of the practice of vaccination into this city, more than a tenth part of all the deaths that occurred, were of small-pox. For the last twelve years, as appears by the reports of the corporation, 27,151 interments have been made : according to the former proportion, as many, at least, as 2715 of these would have died of small-pox : but as only 676 did die of that disease, we may fairly conclude that the practice of vaccination, with all its imperfections about it, has prevented within the last twelve years, upwards of 2000 of our fellow citizens from dying of the small-pox.

premonished by their physician. Deranging interferences of other diseases, are common both to this and to the small-pox inoculation, and as to accidental injuries, they are avoided here by much less precaution than is necessary in the small-pox, to prevent a mortal quantity of that disease. And after all, every difficulty in regard to the kine-pock is so easily done away by a careful re-vaccination by an intelligent and attentive physician; that I want an excuse for noticing such a kind of an objection, but the rashness of a single practitioner, or the want of consideration in one deluded patient may eventuate in their irrevocable misery and remorse. If small-pox inoculation is ever admitted, it should only be after the patient has first been vaccinated.

[9. Taking infection and preserving it.]

INFECTION for vaccination may be taken at any period, after the vesicle has formed and put on its peculiar and characteristic marks, until the efflorescence takes place, but never after. You might perhaps in

some instances, succeed with infection taken at a more advanced period, but more frequently you would be perplexed with a vesicle of irregular appearance and questionable efficacy. Infection taken before the seventh day, does not so uniformly produce a handsome and well marked vesicle as when taken between that time and the commencement of the efflorescence : I prefer taking it at the 8th day (a week) from the time of insertion. In cases however, when the vesicle is more forward or more protracted than usual, an earlier or later period will, of course, be preferable. *The best general rule is not to take the infection before the vesicle has attained nearly, if not quite, its full size ; but before the efflorescence has formed.*

You obtain infection by carefully making several little punctures in the vesicle, when, as already observed, it will exude in small pellucid drops, and may be received upon the point of a lancet, when intended for immediate use ; otherwise, on vaccinators of ivory, or of pieces of quill in shape like that represented in the plate, (fig. 1.) neatly and

smoothly pointed. When quills are used for these purposes, they should be freed of their exterior loose covering, and the vaccinators carefully scraped on both sides at their points, otherwise the infection will be less apt to adhere. When it is intended to preserve the infection for some time, the points of the vaccinators should be repeatedly touched with it, and suffered to dry without exposure to the fire. When properly charged, they will appear handsomely glazed as with a neat transparent varnish. They should be kept in a vial or the barrel of a quill corked up, but not sealed. It should be kept in a cool place. You should always take the infection from your patients yourselves, and never trust the welfare of their vesicles to others: the part is never injured or made sore by taking infection from it, provided it be done with care. A heavy handed operator might do mischief. It would be better to go across the town, to serve a friend, upon such occasions, than to risk the derangement of the vesicle.

I have no experience of preserving the infection by means of the scab: but have successfully operated with infection upon the points of vaccinators which had been taken as much as five months before.

[10. The operation of vaccination.]

VACCINATION is best and most successfully performed by making a small horizontal puncture through the cuticle, and between it and the cutis or true skin, with the point of a sharp lancet loaded with the fluid infection. In making a puncture, care should be taken not to go deep, lest the discharge of blood should wash out the infection: besides, there would be a danger that the inflammation from the mere irritation of the wound itself would interfere with the regular operation of the virus upon the part. If you are obliged to make use of dry infection; after puncturing with the lancet, you introduce the point of an infected vaccinator (without previously moistening it) and retain it in the place for half a minute or more, as the infection may have been re-

cently taken or have been longer kept. The infection dries and hardens by age, and becomes more and more insoluble and difficult to communicate.

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The place for inoculation is on the arm, about the insertion of the deltoid muscle: here the loose sleeve sufficiently protects the incision from the irritation of the air, while it supercedes the necessity of a bandage, which might be equally, if not more injurious.

You should always vaccinate in both arms: this is a point upon which you must always insist; fond mothers may call you cruel: let them not divert you from your duty. A false tenderness might, in event, be real cruelty. By inserting the virus in two places, you have a double chance of its taking, and if by accident, one vesicle should be deranged in its progress, the course of the other may determine the true character of the disease. Besides, this plan will furnish an additional source of infection for further inoculation. And if there be any danger of pre-

venting the necessary constitutional effect, by the exhausting a vesicle (an opinion however, which my experience does not support) you by this means entirely obviate it : you may leave one vesicle untouched.

[11. The testing of persons to determine upon their having undergone the disease.]

AS a *test* to determine whether your patient has had the genuine disease or not, I know of none better or safer than re-vaccination, conducted in the manner before mentioned, for *no person having had the disease will have it a second time*, at least this has uniformly been the result of my practice, which in this particular has been pretty extensive. Local irritation and some faint resemblance of the disease may sometimes take place, but dies away before the period of efflorescence. This test appears to me equally certain with that of the small-pox infection, and less disposed to produce local irritation : and if unfortunately the person shall not have had the genuine kine-pock, he will be less endangered by the experiment.

When vaccination is employed as a test to determine upon the having had either the kine-pock or the small-pox, I repeat, it ought always be done with fresh and fluid infection, taken from a vesicle in that state wherein it is believed to possess its greatest activity.

[12. The Medical treatment.]

IN respect to medical treatment, I know not that any is necessary: a mild purgative is sometimes given after the termination of the disease, but I doubt of its being needful.

When, from the patient, at the time of inoculation, being affected with tenea, psora, tetter, shingles, crusta lactea, or any other cutaneous disease, the vaccine virus is prevented from operating kindly, the puncture partaking of the general pre-existing complaint, or when some other, than genuine vaccine infection has been employed and a troublesome pustular eruption or festering ulcer succeeds; it must be treated according to the nature of the disease of which it appears to partake without any regard to that intended to

have been communicated. In most instances the citrin or other mercurial ointments will generally answer the purpose ; in others the sulphuric acid ointment, or the sulphur, or the sulphur and tar ointments combined, will be more effectual as local applications.

We shall here close our remarks upon this interesting disease, with a wish, that its practice may be as satisfactory and gratifying to you as it has been to me ; and that while in other professional concerns you may realize the words of the poet, that,

“ Sweet peace is his who wipes the weeping eye,
“ And dries the tear of sobbing misery,”

You may, in this particular, experience

“ Those higher joys which to his bosom flow,
“ Who saves the eye from tears, the heart from wo :”

and finally, in your own reputations, furnish full evidence, that

“ A far, far greater honour he secures ;
“ Who stops the coming ill, than he who cures.”

FINIS.

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